

## **#18 Using NOAA Hydrometeorological Testbed Soil Moisture Observations in Flood Forecasting**

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The National Oceanic and Atmospheric Administration (NOAA) Hydrometeorology Testbed (HMT) program has deployed soil moisture observing networks in four river basins. They include the Babocomari River basin located in southeastern Arizona, the North Fork of the American River and Russian River basins located in California, and North Carolina's Catawba River basin. These soil moisture observing networks are being used to study river basins that are prone to destructive flooding, and are of special interest to the NWS River Forecast Centers and NWSFOs.

We will show how soil moisture observations can be combined with QPE and QPF guidance to help anticipate saturation excess flooding events. Studies of the New Year's Eve 2005 Russian River, the 23 July 2008 Babocomari River, and the 26-27 July 2013 Catawba River flood events will be presented. In two of the three cases the HMT observations found that soils were saturated in the basins at least 24 hours before the heavy precipitation events that triggered the flooding. We will also show comparisons between the HMT Russian River soil moisture observations and simulations of soil moisture made using the NWS OHD Research Distributed Hydrological Model (HL-RDHM).

The NWS Office of Hydrological Development (OHD), the NWSFO at Monterey, CA, the State of California Department of Water Resources, and the NWSFO at Greenville-Spartanburg, SC are working with HMT scientists in an effort to understand how the in-situ soil moisture observations can be used to develop flood guidance information tools. The joint NWS-HMT collaboration is ongoing. The preliminary results indicate that the HMT soil moisture observation can be used in flood warning decision making and the evaluation of the NWSRFS streamflow simulations.